

WHAT IS CLAIMED IS:

1 1. A method of encoding a digital signal and its blocks of digital
2 samples for transmission over a packet switched network, the method including steps of:
3 quantizing the binary representations of the digital samples to more
4 coarsely representations of the digital samples;
5 generating prediction samples as fixed point or floating point
6 representations based on previous, quantized digital samples of said quantizing step; and
7 lossless encoding the quantized digital samples conditioned on the fixed
8 point or floating point representations of the generated prediction samples.

1 2. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, wherein
3 the lossless encoding of the quantized digital samples is based on table look-ups.

1 3. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 2, wherein
3 table look-ups are performed with a quantized digital sample for generating two
4 quantization region boundary levels corresponding to the quantized digital sample,
5 wherein the levels with the common generated prediction value and another table are
6 mapped onto a pair of likelihood values that are used for lossless encoding the quantized
7 digital sample.

1 4. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, wherein
3 said lossless encoding step for a specific quantized digital sample comprises outputting a
4 specific code word which corresponds to a specific entry of a table with code words, said
5 specific entry being derived with the generated prediction sample corresponding to said
6 specific quantized digital sample.

1 5. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 4, wherein:
3 said table with code words is chosen among several tables with code words
4 based upon said generated prediction sample, and
5 said specific entry is derived as the entry corresponding to said
6 quantization index of said quantized digital sample.

1 6. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, wherein
3 said step of generating prediction samples is preceded by de-quantization of the quantized
4 digital samples, thereby obtaining the quantization values of said quantized digital
5 samples.

1 7. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, further
3 comprising a step of quantizing the generated prediction samples, wherein said lossless
4 encoding step is based on generated prediction samples having quantization levels of a
5 predefined set of quantization levels.

1 8. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, further
3 comprising a step of setting a state of a predictor generating said prediction samples to
4 zero before starting to encode one of said blocks with digital samples.

1 9. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 8, wherein
3 said lossless encoding step is conditioned on the quantization indices of said generated
4 prediction samples.

1 10. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, wherein
3 said encoding is performed by a multiple description encoder, which multiple description
4 encoder encodes each block of said blocks of digital samples with multiple block
5 descriptions by performing the steps of the encoding method individually for each
6 generated block description.

1 11. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 10, further
3 comprising a step of transmitting, for each block of said blocks of digital samples, at least
4 two different block descriptions in respective data packets with a predefined time interval
5 between the packets.

1 12. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 11, further
3 comprising a step of grouping a respective block description of at least two different
4 blocks of digital samples together for transmission in one and the same data packet.

1 13. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 10,
3 wherein said digital signal is a digitized sound signal and said blocks of digital samples
4 are sound segments, and wherein the encoding method in said multiple description
5 encoder includes an initial step of transcoding an n-bit PCM represented digitized sound
6 signal to at least two representations represented by fewer than n bits each and with
7 respective sets of quantization levels for the segment descriptions of the sound segments
8 of said digitized sound signal.

1 14. The method of encoding the digital signal and its blocks of digital
2 samples for transmission over the packet switched network as recited in claim 1, wherein
3 said digital signal is a digitized sound signal and said blocks of digital samples are sound
4 segments.

1 15. A method of decoding a digital signal and its blocks of digital
2 samples received from a packet switched network, the method comprising steps of:
3 generating prediction samples as fixed point or floating point
4 representations based on previous, quantized digital samples of said digital signal
5 resulting from a lossless decoding of received code words;
6 lossless decoding received code words conditioned on the fixed point or
7 floating point representations of the generated prediction samples; and
8 de-quantizing quantized digital samples resulting from the lossless
9 decoding step into binary representations of the digital samples of said digital signal.

1 16. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, wherein the
3 lossless decoding of the received code words are based on table look-ups.

1 17. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 16, wherein the

3 received code words represents likelihood values, wherein two likelihood values with a
4 generated prediction value and a table are mapped onto two quantization region boundary
5 levels of a corresponding quantized digital sample, said levels being used to derive the
6 corresponding quantized digital sample by performing table look-ups.

1 18. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, wherein said
3 lossless decoding step for a specific quantized digital sample comprises a step of
4 outputting a specific quantization level which corresponds to a specific entry of a table
5 with quantization levels, said specific entry being selected with a received code word
6 corresponding to said specific quantized digital sample.

1 19. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 18, wherein said
3 table with quantization levels is chosen among several tables with quantization levels
4 based upon a generated prediction sample corresponding to said specific quantized digital
5 sample.

1 20. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, wherein said
3 step of generating prediction samples is preceded by de-quantization of the quantized
4 digital samples resulting from the lossless decoding step, thereby obtaining the
5 quantization values of said quantized digital samples.

1 21. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, further
3 comprising a step of quantizing the generated prediction samples, wherein said lossless
4 decoding step is based on generated prediction samples having quantization levels of a
5 predefined set of quantization levels

1 22. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 21, wherein said
3 lossless decoding step is conditioned on the quantization indices of said generated
4 prediction samples.

1 23. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, further
3 comprising a step of setting a state of a predictor generating said prediction samples to
4 zero before starting to decode one of said blocks with digital samples.

1 24. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, wherein said
3 decoding is performed by a multiple description decoder, which multiple description
4 decoder decodes each block of said blocks of digital samples based on at least two
5 different received block descriptions by performing the steps of the decoding method
6 preceding the de-quantizing step individually for each received block description.

1 25. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, comprising the
3 steps of:

4 waiting a predefined time period for reception of at least two different
5 packets including different block descriptions of one and the same block of digital
6 samples;

7 performing the steps of the decoding method preceding the de-quantizing
8 step with respect to those, one or several, different block descriptions of said block of
9 digital samples received within said predefined time period; and

10 de-quantizing the one, or a merger of the several, block descriptions.

1 26. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 25, wherein each
3 received packet comprises several block descriptions of several different blocks of digital
4 samples grouped together, the method comprising a step of dividing successively received
5 packets with respect to the included block descriptions, thereby obtaining several
6 different block descriptions for each block of digital samples to be decoded.

1 27. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 25, wherein said
3 digital signal is a digitized sound signal and said blocks of digital samples are sound
4 segments, and wherein said digitized sound signal is a PCM encoded bitstream, and
5 wherein any merger of said de-quantizing step involves transcoding at least two segment

6 representations, each represented by fewer than n bits, to a single n-bit PCM
7 representation of said one and the same sound signal segment.

1 28. The method of decoding the digital signal and its blocks of digital
2 samples received from the packet switched network as recited in claim 15, wherein said
3 digital signal is a digitized sound signal and said blocks of digital samples are sound
4 segments.

1 29. A computer readable medium having computer executable
2 instructions for causing a digital signal and its blocks of digital samples to be encoded for
3 transmission over a packet switched network, the computer executable instructions
4 performing steps of:

5 quantizing the binary representations of the digital samples to more
6 coarsely representations of the digital samples;

7 generating prediction samples as fixed point or floating point
8 representations based on previous, quantized digital samples of said quantizing step; and

9 lossless encoding the quantized digital samples conditioned on the fixed
10 point or floating point representations of the generated prediction samples.

1 30. A computer readable medium having computer executable
2 instructions for causing a digital signal and its blocks of digital samples received from a
3 packet switched network to be decoded, the computer executable instructions performing
4 steps of:

5 generating prediction samples as fixed point or floating point
6 representations based on previous, quantized digital samples of said digital signal
7 resulting from a lossless decoding of received code words;

8 lossless decoding received code words conditioned on the fixed point or
9 floating point representations of the generated prediction samples; and

10 de-quantizing quantized digital samples resulting from the lossless
11 decoding step into binary representations of the digital samples of said digital signal.